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ABSTRACT

To determine what happens during a mathematics lesson, a questionnaire was designed with questions on the lesson, materials, interruptions, evaluation, and routine duties. Of 100 questionnaires distributed, 94 were returned, by teachers in kindergarten through grade 7 and special education classes. About half the teachers had taught less than five years, and most were in suburban schools. Fifty-seven teachers reported a 30-45 minute mathematics period, while 35 teachers reported a 45-60 minute period. Review, explaining, and practice accounted for time spent by most teachers, with over half including mental computation and about one-third including experimentation and evaluation. The textbook was the major material used, with worksheets ranked second. Manipulative materials and games were used in less than half of the classrooms. Children caused more interruptions than did administration or other sources. Routine activities are listed. Most of the mathematics period was used for non-instructional purposes. (MNS)

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TIME ALLOCATED TO MATHEMATICS IN THE ELEMENTARY SCHOOL

by

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What is happening during the time allocated to mathematics in the elementary school? This question is being asked by educators, parents. Of particular interest is the effect time on task has on achievement.

Marliave cites strong research evidence to support the thesis that the amount of time allocated for instruction is the single most important school factor associated with student achievement.[2] Powell[3] reports the more time spent in math instruction the better the achievement. Rosenshine[4] cites results from eighteen studies to affirm that there is a significant relationship between content covered and student achievement. Karweit's research paper presented to the National Commission on Educational Excellence opens with the statement, "how time is used in school is a central topic of practical and research concern." (1:1)

In an attempt to seek some answers to the question, What happens during a mathematics class in a single class period, a questionnaire was designed. The questionnaire sought answers pertaining to the lesson, materials, interruptions, evaluation and routine duties. The questionnaire was distributed to selected University classes, teachers at random. Class visitations were done to further validate the study. Of the 100 questionnaires distributed, ninety-four were returned. Chart I shows the number of teachers surveyed by grade level.

CHART I

GRADE	Teachers
Kindergarten	2
One	13
Two	16
Three	8
Four	16
Five	13
Six	15
Seven	5
Spec. Educ.	6
	TOTAL 94

Chart I represents teachers at each grade level. Most of the teachers surveyed had a teaching experience of less than 10 years. Chart II shows the teaching experience of the population surveyed.

CHART II

Years of Experience	Number of Teachers
0 - 5	44
5 - 10	25
10 +	25

Of the 94 teachers surveyed, 69 had less than ten years of teaching experience. Chart III indicates that most of the teachers responding to the questionnaire were suburban teachers.

CHART III

School Setting	Responses
Urban	16
Suburban	60
Rural	17
Private	1

This survey included more suburban teachers than any other one group.

In response to the length of a single mathematics lesson, 57 teachers reported a 30-45 minute period, 35 teachers reported 45-60 minute period and 2 responded other.

In response to what is included in a single lesson 70 of the teachers reported they review part of the period, 84 teachers do explaining in a single period, 85 teachers use practice, 55 teachers checked they include

mental computation and 30 teachers include experimentation. Chart IV shows teacher responses to the strategies used during mathematics lesson.

CHART IV

	Responses
Lesson	
Review	70
Explanation	84
Practice	85
Mental	55
Experimentation	30
Materials	
Textbook	76
Worksheets	58
Workbook	32
Manipulations	43
Games	43
Others	22

Chart IV responses indicate more teachers use explanation and practice during a mathematics lesson. The textbook is the major source of material used. The chart indicates teachers use more than one strategy and more than one material in a single class period.

Chart V indicates the interruptions during any one mathematics period.

CHART V

Interruption	Responses
Child	
0-5 min.	118
5-10 min.	45
10+	40
Administration	
0-5 min.	21
5-10 min.	2
10+	0
Other	
0-5 min.	9
5-10 min.	2
10+ min.	2

Chart V shows more children interruptions than any other cause. The interruptions vary in length but the largest number are from 0-5 minutes.

Chart VI indicates teachers spent a portion of the mathematics period in evaluation.

CHART VI

Evaluation	Responses
Pre-test	
0-10 min.	4
10-20 min.	13
20-30 min.	2
30+ min.	2
Total	21
Post-test	
0-10 min.	5
10-20 min.	8
20-30 min.	11
30+ min.	10
Total	34

Chart VI shows some teachers use evaluation in pre-testing and post-testing. More teachers use post-tests than pre-tests.

Chart VII shows time involved in routine duties of a mathematics class period. Routine duties have been subdivided into six areas.

CHART VII

Routine Duties	
Passing Out Papers	
0 - 5 min.	76
5 - 10 min.	0
Collecting Papers	
0 - 5 min.	52
5 - 10 min.	2
Children Checking Papers	
0 - 5 min.	29
5 - 10 min.	34
Recording Grades	
0 - 5 min.	32
5 - 10 min.	17
Passing out Instructional Material	
0 - 5 min.	53
5 - 10 min.	4
Collecting Instructional Material	
0 - 5 min.	44
5 - 10 min.	3
Other	
0 - 5 min.	0
5 - 10 min.	2

Chart VII shows 88% of the teachers use 0 5 minutes passing out paper and 73% use 0-10 minutes checking papers. Over 50% of the teachers use time to pass out instructional material and collecting instructional material.

Summary: In answer to the question, What happens during a mathematics class period:

(1) The textbook is the most used material in a mathematics class and work-sheets rank second.

(2) Children cause more interruptions in the classroom than other source .

(3) Less than 50% of the teachers studied spend time in pre-testing or post-testing during a class period.

(4) Teachers use explanation as the major teaching strategy in mathematics.

(5) Routine duties consume a large portion of the mathematics period.

(6) Manipulation and games are used in less than 50% of the classrooms.

(7) Most of the mathematics period is used for non-instructional purposes.

References

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3. Power, Marjorie, "New Evidence for Old Truths," Educational Leadership October, 1979.

4. Rosenshine, Barak V., "Academic Engaged Time, Content Covered, and Direct Instruction," Journal of Education, Vol. 160, August, 1978.

5. Young, Timothy, "Teacher Time on Task: A Significant Variable," Phi Delta Kappan, September, 1980.

What happens during an arithmetic class period is a question often asked by educators and parents. In an attempt to seek some answers, the attached questionnaire has been designed.

General Information

Grade level _____

Number of students in grade _____

Number of years of teaching experience _____

School setting

Urban	Surburban	Rural

Arithmetic Classroom Checklist

Check appropriate box or boxes as it applies to any one class period.

I. Lesson

- Individual ☐
- Small Group ☐
- Total Class ☐

II. Length of lesson

30-45 min.	45-60 min.

III. Lesson included

1. Review ☐
2. Explanation ☐
3. Practice ☐
4. Mental ☐
5. Experimentation ☐

IV. Materials used during lesson (more than one box may be checked)

1. Textbook ☐
2. Worksheets ☐
3. Workbook ☐
4. Manipulatives ☐
5. Games ☐
6. Others _____ ☐

V. Interruptions

Child		Administration		Other	
Number of Interruptions	Amount of time Utilized	Number of Interruptions	Amount of time Utilized	Number of Interruptions	Amount of time Utilized

VI. Evaluation

Pre-test		Post-test	
Used	Time Utilized	Used	Time Utilized

VII. Routine Duties

	Time in minutes utilized. 0 - 5	5 - 10
1. Passing out papers		
2. Collecting papers		
3. Children checking papers		
4. Recording grades		
5. Passing out instructional material		
6. Collecting instructional material		